CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH
WALTER M. DICKIE, M.D., Director

Weekly Bulletin

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*A Health Teaching Project in a One-Room School—The Uses and Protection of Our Water Supply**

By MARGARET NEAGLE, San Marcos, California

The San Marcos Emergency Elementary School is a one-room school situated about twenty-one miles north of Santa Barbara. The school is located near Gibraltar Dam which is the impounding reservoir for the water supply of the city of Santa Barbara. The overflow from this water supply passes by the school.

During the past year the enrollment of the school included all grades except the second and the seventh. Ages ranged from five and a half to fourteen years.

The interest of the children are naturally centered around things scientific. This is probably due to their environment which, because of its natural character, stimulates interest in the things of nature. The children had previously carried out a unit of work on conservation which had emphasized the importance of safeguarding the things of their environment. They had developed an understanding and an appreciation of man's dependence upon and utilization of nature.

It was logical, therefore, that their interests at the beginning of this year were focused upon another aspect of their environment—namely, that of providing a water supply for a community. Some of the children had visited the new filter plant erected for the city of Santa Barbara, and others had visited some of our great water power projects. Their discussion of the summer's activities brought forth questions concerning a water supply. Some of these were: "Why did they have to build a filter plant for Santa Barbara; we use hard water and find it all right? Why does a city go to the expense of softening water? What makes the water hard? How does this water get to the filter plant? How did people of Santa Barbara get the water rights to the area?

We decided that we could best group these questions under the following problems:

1. How do the people in a community use water?
2. What are the uses of water in a home?
3. What is the composition of water? What are its properties?
4. How did the people of Santa Barbara get the rights to the watershed area in which we live?

The primary grades decided to work on a survey of the uses of water in a community and in a home. The intermediate grades planned to find the reasons why the city of Santa Barbara had to reach out into our mountains to obtain its water supply. The upper grades decided to do some research on the

* Abstracted from a paper read before the Department of Health Officers League of California Municipalities, Santa Barbara, Sept. 7, 1938.

problem of the composition and properties of water. The primary grades decided to first list all of the uses of water in a home, school, and community which they could name. Then their next plan was to look for pictures which would show further uses. These pictures they could put into a book of their own for class use. The intermediate grades found it necessary to do research on the first water supply of Santa Barbara. The upper grades began a study of the properties of water.

Two weeks' research resulted in the classification by the primary grades of the various uses of water under cleansing, drinking, and irrigation. The small children had their books well started. The other children had made a survey of the development of the Santa Barbara water system and had conducted simple experiments to better understand the nature of water. The result of this work was a suggestion from one of the older children to visit the filter plant to see what was done to change our water for the city's use. A suggestion was made also to visit the remains of the old Santa Barbara water system at the Mission. We made plans for this visit and listed questions to answer for ourselves. The children's report of this visit is as follows:

> "We went to Santa Barbara to see the filter plant and to see what remains of the old Santa Barbara water system. We saw the water as it came into the plant from Gibraltar Dam. We saw the processes through which the water goes. We found out that the filter plant does three things: it cleans the water, softens it, and purifies it. We tasted the filtered water.
>
> "At the Botannical Gardens we saw the ruins of the old Mission Dam built in 1807. We went to the Mission to see the fountain, laundry basin, clay pipes, and other relics of early water systems. The mission father took us up on a hill to see what was left of the reservoirs, settling tank, and grist mill."

The children had been most interested in the process of purifying the water by using chlorine. This brought forth questions on the reasons for purifying water. We did some research on ways of purification. The children carried out a simple experiment on distilling water which proved to them that water which is distilled is freed of impurities. They found that they could not find material on means of purification and on the types of water-borne diseases. We decided to ask our school nurse for information regarding these problems. Miss Packer brought us some material on water purification and talked to us about ways of freeing water of germs. From this discussion we found that water is most commonly purified by using chlorine, by seration, and by filtration.

Our school nurse suggested that we inquire further into the types of water-borne diseases most prevalent. We wrote to the State Department of Public Health for information, and received a letter with good material on water purification.

When the county health officer arrived the following week to give diphtheria inoculations, the children asked him further questions concerning water purification and the ways in which water may spread disease. Dr. Main explained the necessity for protecting a water supply, and discussed types of germs which may be carried by water. He told the children of the class of minute organisms termed algae which thrive in water. A few days later when the state health inspector came to test our water, he brought with him some excellent source material and a small microscope which Dr. Main had sent to the children. The health inspector explained the way in which water was tested, showed the children how he took the sample of our water, and gave us an interesting talk on the way in which waste water is cared for in the small water systems of sural communities. This discussion was helpful to the children because it showed them how their own drinking water was safeguarded.

The material sent by the county health doctor proved very valuable. The microscope was used by the children to examine samples of water which they took from nearby ponds. The use of the microscope led them into a study of the types of algae common to waters.

The result of these contributions by the health authorities was a strongly developed interest in the matter of cleanliness habits and in the consideration of uses of water in the human body.

The activities of the children which grew out of these problems were centered around the building of a house to show the uses of water in a home, the building of a small dam as a source of water, and the construction of a filter plant to purify the water.

The reading which the children had done concerning the ways in which a city or a rural community obtains its water and purifies it led them into a further study of the uses of water. The problem of irrigation was the next one studied. This had developed from the study of the effect of water upon living things. The result of this investigation was a study of irrigation projects within our state, including Boulder Dam and the

Central Valley water projects. This information stimulated the children's interest in power provided by water. This became the theme of the next unit of work on "How Power is Changing the Way We Live." This is the unit of work being carried out now by the children.

The first half of our year's work proved interesting to the children of all grades. The problems of cleanliness and healthful living which had developed from our study served to show the children the reasons for building good health habits. The older children gained a deeper understanding of the contribution of health agencies to the welfare of society, of the value of scientific knowledge applied to health, of the actual functioning of the human body, and of the necessity for accepting individual responsibility in safeguarding the health of a community.

The research and activities had been rich enough to provide the children with experience in many different skills and types of subject matter. I shall next consider the skills and types of information derived from this unit of work.

ARITHMETIC ACTIVITIES

The nature of the study of providing an adequate water supply gave the children an opportunity to use statistics in a functional way. The comparison of the present rate of death from water-borne diseases with the totals of former years was expressed by the children in graphs of different forms. This involved many arithmetic processes—subtraction, addition, dividing, and finding percentages. The study of the amount of water contained in the human body and in different types of foods could be expressed only in a numerical fashion. The building of a filter plant and of a house gave actual use of many arithmetic skills. The children decided upon a scale plan for building, used actual measurements wherever possible, and reduced the measurements to the scale plan. The scale plan of two inches for every foot of actual size was simple enough for primary children to grasp because it involved a simple doubling of the actual number of feet to find out how many inches were needed.

READING ACTIVITIES

The reading activities in the unit were centered around the securing of information for the solution of our problems. The children from the third grade up did real research on the questions concerning the necessity of safeguarding a water supply. We found excellent material in recent health publications.

The children found many of these references most readable. They discovered that the story of the conquest of disease by scientific study and continued effort on the part of health leaders was as thrilling a narrative as the building of a giant dam or the exaggerated tales of heroic battles. The work of the primary children was based primarily on cooperative stories concerning their activities.

LANGUAGE ARTS

Because this unit of work involved much research, we had to learn how to best assemble material into a well-organized report. This gave practice in language arts, both oral and written. The reporting of the day's work and the summarizing of the completed activities for each day's record was again experience both oral and written.

ART

Just as in the case of creative writing, the varied character of the basic theme—water—lent itself to diversified art expression. We learned how to draw water in all of its forms, how to indicate the effect of light and shadow, and how to use different media of expression. We used water colors, poster paint, crayon, and pen and ink and pencil sketching. The smaller children did some good easel work with poster paints.

(Continued in next issue)

PUBLIC HEALTH NURSING EXAMINATION ANNOUNCED

The California State Department of Public Health has announced an examination for certificate in public health nursing, to be conducted by the department at 9 a.m. Saturday, December 10, 1938, in both Los Angeles and Sacramento. Application forms for entrance upon the examination may be obtained from the offices of the California State Department of Public Health at Sacramento, 401 State Office Building; San Francisco, 305 State Building; or Los Angeles, 703 State Building. Completed applications should be returned to the California State Department of Public Health, 305 State Building, San Francisco, and must be in that office not later than November 26, 1938.

NEW HEALTH OFFICER OF CORCORAN

Dr. Frederick W. Knight has been appointed city health officer of Corcoran to succeed Dr. J. H. Van Vorhis, who died recently. Dr. Van Vorhis had served as city health officer of his community for many years.

MORBIDITY

Complete Report for Following Diseases for Week Ending September 24, 1938

Chickenpox

79 cases: Berkeley 6, Oakland 14, Pleasanton 1, Reedley 1, Humboldt County 1, Glendale 2, Long Beach 3, Los Angeles 5, Pasadena 1, Redondo 1, South Gate 1, Ukiah 1, Napa County 5, Riverside 1, San Diego 2, San Francisco 22, Lompoc 4, Santa Barbara 1, Santa Clara County 1, San Jose 1, Stanislaus County 1, Tulare County 4.

Diphtheria

30 cases: Berkeley 1, Oakland 1, Pittsburg 1, Fresno County 1, Fresno 1, Inyo County 1, Bakersfield 1, Los Angeles County 2, Azusa 2, Los Angeles 5, Pomona 1, Signal Hill 4, Sacramento 1, San Bernardino County 2, San Diego County 3, San Francisco 1, Tulare County 1, Yuba County 1.

German Measles

20 cases: Alameda County 1, Alameda 2, Berkeley 2, Fresno 1, Sanger 2, Bakersfield 1, Los Angeles County 2, Long Beach 1, Los Angeles 3, Santa Ana 1, Riverside 1, San Diego County 1, San Diego 1, Sonoma County 1.

Influenza

12 cases: Los Angeles County 1, El Monte 1, Hermosa 1, Los Angeles 5, San Diego 1, San Francisco 1, Arroyo Grande 1, San Mateo County 1.

Malaria

11 cases: Long Beach 1, San Francisco 1, San Joaquin County 5, Solano County 1, Tulare County 2, Yuba County 1.

Measles

170 cases: Alameda 1, Oakland 8, San Leandro 1, Chico 1, Contra Costa County 4, Placerville 1, Fresno County 1, Kern County 3, Bakersfield 1, Los Angeles County 5, Glendale 2, Long Beach 2, Los Angeles 7, San Fernando 1, Santa Monica 1, Sierra Madre 1, South Pasadena 1, Bell 2, Chowchilla 1, Mono County 1, Monterey County 2, Orange County 4, Santa Ana 3, Riverside County 1, Sacramento County 1, Sacramento 1, National City 1, San Diego 5, San Francisco 82, San Joaquin County 1, Manteca 1, Stockton 6, San Luis Obispo County 1, San Mateo County 1, Santa Barbara 1, Santa Clara County 2, Gilroy 1, San Jose 3, Solano County 1, Sonoma County 2, Red Bluff 2, Oxnard 1, Ventura 1, Woodland 1.

Mumps

230 cases: Alameda County 9, Alameda 2, Berkeley 33, Livermore 1, Oakland 33, Pleasanton 1, Chico 3, Contra Costa County 3, Richmond 2, Fresno County 4, Fresno 6, Sanger 1, Kern County 4, Bakersfield 2, Los Angeles County 9, Alhambra 1, Culver City 1, Glendale 2, Long Beach 1, Los Angeles 6, Pasadena 1, Pomona 1, Santa Monica 4, Mendocino County 2, Ukiah 6, Monterey County 1, Soledad 1, Orange County 2, Huntington Beach 1, Orange 3, Santa Ana 1, Tustin 1, Sacramento 10, San Bernardino County 1, San Diego 9, San Francisco 26, San Joaquin County 3, Manteca 1, Stockton 5, Tracy 1, San Luis Obispo 2, Santa Barbara 1, San Jose 8, Santa Cruz 3, Vallejo 1, Trinity County 1, Tulare 2, Exeter 3, Lindsay 3, Ventura County 1, Yuba County 1.

Pneumonia (Lobar)

31 cases: Alameda 1, Imperial County 1, Calexico 1, Los Angeles County 4, Alhambra 1, Glendale 1, Long Beach 1, Los Angeles 8, South Pasadena 1, Monterey County 1, Sacramento 1, San Bernardino County 1, San Diego 1, San Francisco 3, Stockton 1, Lompoc 1, Santa Barbara 1, Santa Clara County 1, Ventura County 1.

Scarlet Fever

70 cases: Berkeley 2, Oakland 1, Contra Costa County 1, Martinez 1, Walnut Creek 1, El Dorado County 1, Fresno County 1, Kern County 3, Los Angeles County 13, Alhambra 1, Culver City 1, Glendale 1, Los Angeles 16, Monrovia 2, Pasadena 1, Torrance 1, Lynwood 1, Monterey Park 1, Monterey County 1, Orange County 1, San Jacinto 1, San Bernardino County 2, San Diego 1, San Joaquin County 5, Stockton 3, Burlingame 1, Shasta County 1, Stanislaus County 3, Yuba County 2.

Smallpox

3 cases: Placer County 1, Auburn 2.

Typhoid Fever

18 cases: Fresno County 2, Imperial County 1, Calipatria 1, Los Angeles 1, Redondo 1, San Fernando 1, Banning 2, Blythe 1, San Bernardino County 1, San Diego County 1, San Francisco 2, Los Gatos 1, Suisun 1, Stanislaus County 1, California 1.*

* Cases charged to "California" represent patients ill before entering the state or those who contracted their illness traveling about the state throughout the incubation period of the disease. These cases are not chargeable to any one locality.

Whooping Cough

178 cases: Alameda County 3, Alameda 4, Berkeley 5, Oakland 10, San Leandro 1, Contra Costa County 2, Fresno County 7, Fresno 1, Humboldt County 1, Kern County 10, Los Angeles County 12, Alhambra 2, Compton 5, Culver City 1, Long Beach 2, Los Angeles 26, Redondo 2, San Fernando 3, Whittier 1, Bell 1, Ukiah 2, Salinas 2, Anaheim 1, Santa Ana 10, La Habra 3, Plumas County 2, Riverside County 1, Riverside 1, Sacramento 3, San Diego County 3, Oceanside 2, San Diego 5, San Francisco 12, San Joaquin County 1, Stockton 1, Lompoc 3, Santa Barbara 2, San Jose 2, Santa Cruz 4, Stanislaus County 7, Tulare County 1, Visalia 1, Ventura County 3, Oxnard 5, Santa Paula 2.

Anthrax

One case: Sacramento.

Dysentery (Amoebic)

3 cases: Los Angeles.

Dysentery (Bacillary)

2 cases: Los Angeles 1, Tulare County 1.

Pellagra

2 cases: Los Angeles 1, San Francisco 1.

Poliomyelitis

2 cases: Kern County 1, Winters 1.

Tetanus

3 cases: Los Angeles 2, San Bernardino County 1.

Trachoma

22 cases: Fresno 2, Los Angeles 1, Riverside County 2, San Jacinto 1, Indio 4, Sonoma County 12.

Encephalitis (Epidemic)

8 cases: Fresno County 2, Riverside County 4, Riverside 2.

Paratyphoid Fever

One case: Berkeley.

Trichinosis

One case: San Joaquin County.

Botulism

4 cases: Los Angeles 2, San Diego County 2.

Food Poisoning

190 cases: San Diego County 91, Oceanside 57, San San Diego 34, San Francisco 8.

Undulant Fever

7 cases: Humboldt County 2, Los Angeles 1, Pasadena 1, Trinity County 1, Ventura County 1, California 1.*

Coccidioidal Granuloma

2 cases: Fresno County 1, San Luis Obispo County 1.

Septic Sore Throat

3 cases: Alameda 1, Placentia 1, San Diego 1.

Rabies (Animal)

23 cases: Kern County 2, Alhambra 1, Los Angeles 1, Redondo 2, Merced County 1, Riverside 1, San Luis Obispo 1, Santa Clara County 10, Los Gatos 1, Santa Clara 1, Sunnyvale 1, Modesto 1.

Men that look no further than their outsides, think health an appurtenance unto life, and quarrel with their constitutions for being sick; but I that have examined the parts of man, and know upon what tender filaments that fabric hangs, do wonder that we are not always so; and considering the thousand doors that lead to death, do thank God that we can die but once.—Sir T. Browne.

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